

HURRICANE SERVICES



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION • UNITED STATES DEPARTMENT OF COMMERCE

Hurricanes and tropical storms are among nature's most powerful and destructive phenomena. Storm surge flooding, powerful winds, inland flooding from extensive rainfall, and even tornadoes generated by these storms pose threats to anyone and anything in their path.

NOAA, the National Oceanic and Atmospheric Administration, is the federal agency charged with providing forecasts and warnings to the American public about these storms to protect lives and livelihoods, ensure continuity of safe navigation, and support recovery from storm impacts. It is a multidisciplinary effort that involves nearly every line office within NOAA, along with other federal agencies such as FEMA and NASA, state and local emergency management officials, researchers within NOAA and throughout academia, private sector meteorologists, and media.

NOAA's National Hurricane Center (NHC) in Miami, Fla., is America's calm, clear, and trusted voice that saves lives, mitigates property loss, and improves economic efficiency by issuing watches, warnings, forecasts, and analyses of hazardous tropical weather across the Atlantic Basin (Atlantic Ocean, Gulf of Mexico, and Caribbean Sea) and the Eastern Pacific. NHC products are distributed through a close working relationship

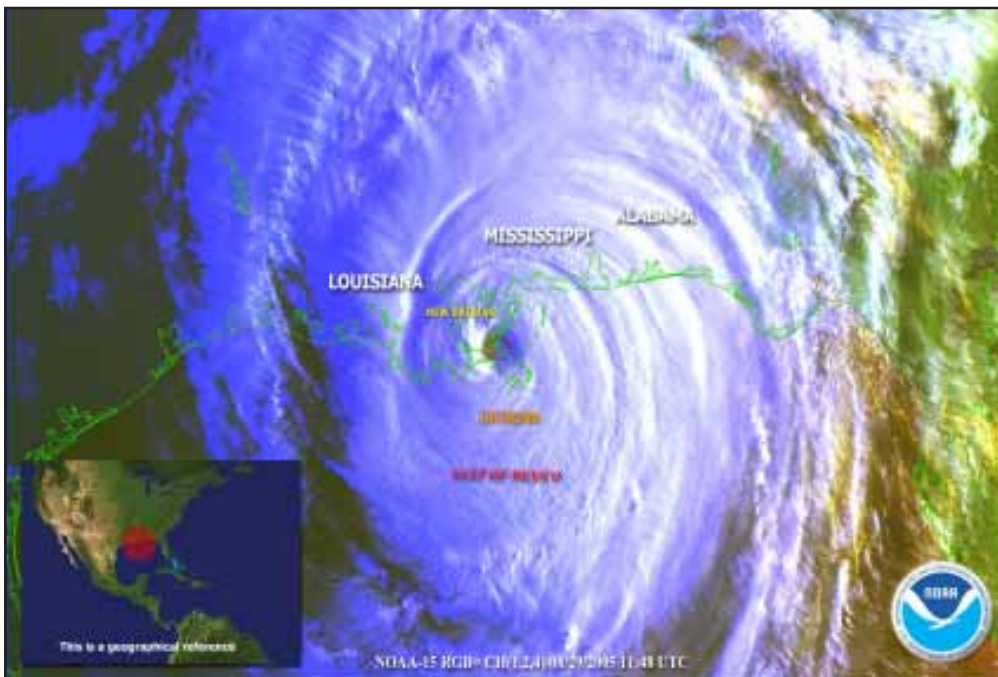
with the media and emergency management communities. Outside the June through November Atlantic hurricane season, the NHC conducts an extensive outreach and education program, training U.S. emergency managers and representatives from many other countries affected by tropical cyclones.

The tropical waters surrounding Hawaii are monitored by NOAA's Central Pacific Hurricane Center in Honolulu.

NOAA's National Centers for Environmental Prediction (NCEP) in Camp Springs, Md., oversees NHC in addition to NOAA's Climate Prediction Center which, in collaboration with NHC and NOAA's Atlantic Oceanographic and Meteorological Laboratory Hurricane Research Division, issues the seasonal hurricane outlook for the Atlantic Basin each May with an update in August, prior to the season's peak. Forecasters use global ocean and atmosphere data from a wide array of in situ and remote sensing instruments to project the range of tropical storms, hurricanes, and major hurricanes (Saffir-Simpson Hurricane Scale Category 3 and higher) that will likely form. NOAA's Hydrometeorological Prediction Center, also part of NCEP, provides a nationwide weather forecast and analysis out through seven days and assumes responsibility of tracking the inland remnants of tropical storms and hurricanes.

Local impacts of tropical storms and hurricanes on counties, parishes, and cities across America are reflected in forecasts, watches, warnings, and other statements issued by a local office of NOAA's National Weather Service. With a network of Doppler weather radars, advanced computer workstations, automated weather stations and river gauges, and trained storm spotters, dedicated NWS forecasters produce a stream of forecast information that is critical to saving lives and protecting property.

In support of the local NWS offices, NOAA's Storm Prediction Center in Norman, Okla., issues thunderstorm and tornado outlooks and watches. NOAA's National Environmental Satellite, Data, and Information Service, with its suite of satellite-based products, assists local forecasters in producing forecasts and potentially



This NOAA satellite photo shows the landfall of Hurricane Katrina on the southeastern Louisiana coastline, August 29, 2005. NOAA acts as a sentinel—the federal agency charged with forecasting and warning the American public about hurricanes and other storms, protecting lives and livelihoods.

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life-saving weather warnings. When a tropical cyclone forms in the Atlantic Ocean, Caribbean Sea or Gulf of Mexico, the first official satellite images of the storm are taken by NOAA's geostationary (GOES) weather satellites and shared with NHC forecasters, the media, and the public. Hundreds of images are taken of a given storm. After landfall, the GOES satellite images are used by NOAA's Hydrometeorological Prediction Center to derive rainfall predictions, and for emergency disaster monitoring and mitigation purposes.

Specially equipped NOAA aircraft, operated by the Aircraft Operations Center of NOAA Marine and Aviation Operations, play an integral role in hurricane forecasting. Data collected during hurricanes by these highflying meteorological stations, and from a variety of other sources, help forecasters predict how intense a hurricane will be, and when and where it will make landfall.

NOAA operates two Lockheed WP-3D aircraft that fly directly into the eye of the storm at altitudes primarily between 5,000 and 10,000 feet. NOAA Research uses information from these aircraft and computer models to help improve operational products and our understanding of hurricanes. Flights provide data for NOAA's Hurricane Research Division to better our understanding of intensity and other hurricane dynamics. "Hurricane Hunter" aircraft operated by the 53rd Weather Reconnaissance Squadron of the U.S. Air Force Reserve also fly operational missions. A NOAA Gulfstream IV hurricane surveillance jet flies at 45,000 feet in the perimeter of the storm, painting a detailed picture of weather systems in the upper atmosphere surrounding tropical cyclones. These operational data are used in computer models that help forecasters make predictions.

Key to issuing forecasts and warnings is the public's ability to receive and respond to them. NOAA Weather Radio All-Hazards provides the public the most reliable and immediate means for the NWS to warn the public, even when traditional communication methods are down, of impending hazardous weather and non-weather emergencies.

The media are also an important conduit of information that people in potentially impacted areas can use to make informed decisions. NOAA's Public Affairs offices work closely with broadcast and print media to keep them up-to-date with the latest information to keep viewers, listeners and readers informed.



The Lockheed WP-3D (top) and Gulfstream IV (bottom) Hurricane Hunter aircraft are two of many methods NOAA uses to aid in observing and predicting hurricanes and major storms. The WP-3Ds have been the primary airborne platforms for NOAA meteorological research since the late 1970s, while the Gulfstream IV, acquired in 1996, is a state-of-the-art, high altitude research platform.

When a storm's fury has passed, NOAA's National Ocean Service plays a critical role in response and recovery missions. The National Geodetic Survey uses a Cessna Citation, a versatile twin-engine jet aircraft modified for acquiring coastal remote sensing imagery, to conduct flights to assess damage from erosion. These images will assist both in recovery operations and long-term restoration and rebuilding decisions. The Office of Coast Survey's hydrographic survey ships, which support the agency's nautical charting mission, may also be called into service to conduct sonar surveys of the seafloor to detect new obstructions from wreckage, shoaling, and other dangers to navigation so ports can be reopened. The Office of Response and Restoration is responsible for assessing environmental impacts of any hazardous material spills caused by the storm, and developing long-term environmental recovery plans. ☺